December 29, 2008

Ms. L. A. Cole
Director, Environmental, Safety and Health Office
PSNS & IMF
1400 Farragut Avenue
Bremerton, WA 98314-5001

Dear Ms. Cole:

Re: Comments on the Second Draft of All Known Available Reasonable Treatment (AKART) Study
USEPA's NPDES Permit No. WA-00206-2

Thank you for submitting the second draft AKART Study to the Department of Ecology (Ecology) and EPA-Region X for review on November 12, 2008, and for addressing many comments that Ecology and EPA submitted by email and teleconference call on the first draft of the AKART Study. We appreciate the work and effort that Puget Sound Naval Shipyard (PSNS) has put in, to complete the Study in such a short time. A thorough review has been made of the second draft AKART Study and we offer the following comments.

1) Chlorine is used as additive in cooling water. PSNS indicates that chlorine may have a potential to exceed the permit limit (Table 5-4, page 18 contains the statement: "Rough calculations indicate that the contribution of chlorine from potable water could exceed the noted limits."). However, chlorine is not included as a pollutant of concern (POC) in Table 6-1, page 23. If a mixing zone for chlorine is needed, then this pollutant needs to be included in the AKART Study.

2) PSNS also identified zinc as a POC (Table 6-1, page 24), but no AKART discussion for zinc is included in the rest of the document. Again, if a mixing zone for zinc is needed, then this pollutant needs to be included in the AKART Study.

3) Page 37, Table 8-6 indicates that the dataset collected for copper for the dry dock outfalls included a high percentage of values in which copper was not detected. The average percentage of values reported as not being detected for four dry dock outfalls was 62%.

The highest percentage reported was 82% for Outfall 019. It appears that the test method used for copper is set at a detection limit of 10 µg/L. Since the limits proposed in the working draft permit are 2.4 and 5.8 µg/L (based on water quality), Ecology recommends that PSNS make arrangements with the laboratory as soon as possible to switch to a detection limit of less than the proposed permit limits. This should be fairly easily implemented by any accredited laboratories. The lower detection limit is required for compliance assessment purposes, and for better characterization of the wastewater for treatment evaluation or derivation of a mixing zone.

4) Page 59, the last sentence of the first paragraph indicated that wastewater consisting of potable water is being discharged to Sinclair Inlet. It implies that this potable water is one source of the wastewater being directed to the drydock floors and discharged to Sinclair Inlet by means of the drydock drainage system. The text on page 67 indicates that water is directed to the dry dock floors includes hull wash water, steam condensate, and freeze protection water. What is the potable water being used for on dry docks, and why is potable water being discharged to the Inlet? Why is the above-mentioned wastewater not being collected directly without being in contact with the dry dock floors? What effort has been made to eliminate or prevent these waste streams from getting into contact with the drydock floors? The working draft permit **prohibits** the direct discharge of water that comes in contact with the dry dock floors.

Additional analysis should be provided in the AKART study for the dry dock floor drainage. Any water that contacts the dry dock floor has the potential to wash contaminants to Sinclair Inlet. Of the three waste streams that comprise the dry dock discharge, the dry dock floor drainage has the highest concentration of contaminants. Water at the outfall sampling location is diluted by the other two wastestreams, the ship cooling water and hydrostatic relief water.

~~.~~ *(check with Susan? state the point)*

Jeanne – This may not be the best location for this comment, but my point is that - Once potable water comes in contact with the dry dock floor it is no longer potable. For the dry docks PSNS should focus on providing source control and treatment for the dry dock floor drainage/stormwater which is the most concentrated of the three wastestreams. I believe the cooling water and hydrostatic relief wastestreams are huge volumes and have more dilute concentrations of contaminants compared with the dry dock floor drainage/stormwater. The cooling water and hydrostatic relief waters dilute the more concentrated dry dock floor drainage wastestreams. The treatment option of the study seems focused on treating all three wastestreams and showing it to be impractical because of the high volumes. For treatment look at treating the most concentrated waste stream

(the dry dock drainage/stormwater) and the high risk storm water areas. It would be helpful if the AKART study would clearly summarize the concentrations of copper for these three wastestreams (i.e. dry dock drainage, cooling water and hydrostatic relief water).

5) The AKART analysis for the piers is somewhat limited. Page 95 states that heavy industrial practices do not occur on the piers. Are metal cutting and painting operations prohibited on the piers? Given that there are 1,043 track drains on the piers that drain directly to Sinclair Inlet (page 83), best management practices (BMPs) on the piers should be particularly rigorous.

6) The current practice used with the Process Water Collection System (PWCS) is to divert waste streams to the sanitary sewer based on the turbidity of the waste stream. The ability to control copper using turbidity in the waste stream is based on a correlation of copper and turbidity, as illustrated on Figure 6, page 62. EPA has two concerns with this current practice.

Commented [srp1]: Does Ecology share these concerns? If so, it would be better to delete reference to only EPA for this number.

EPA questions whether the copper and turbidity correlation is applicable at the low copper concentrations regulated under the NPDES permit. The scale on Figure 6 is 0 to 2,000 µg/L. The NPDES permit is concerned with low levels of copper, the benchmark level for stormwater is 20 µg/L for copper. Although difficult to discern from the scale of the figure, it appears there is little correlation between turbidity and copper in this lower range. Please ~~generate another graph with a smaller scale~~include a graph which highlights the data in the lower copper concentrations range (e.g. 1 to 50 µg/L~~.~~

It is EPA's understanding that PSNS generally uses a trigger concentration of 25 NTU, to divert the waste stream to the sanitary sewer. On page 61, it states that the median copper concentration below 5 NTU is 31 ppb, with 95% of the water samples being below 90 µg/L. Therefore, using 25 NTU as the trigger to direct waste streams to the sanitary sewer would allow waste streams to discharge to Sinclair Inlet, at much greater concentrations than the benchmark level of 20 ppb. Based on the line drawn on Figure 6 representing the correlation between copper and turbidity, it would appear that any waste stream with a turbidity greater than 1 NTU would be greater than 20 µg/L of copper. Jeanne – the point is that the PSNS trigger of 25 NTU is a much more relaxed critiera than what would be allowed with a benchmark level of 20 ppb for copper. ~~Can the PWCS controller be set for a turbidity level lower than 5 NTU without exceeding the flow allocation to the sanitary sewer system? Please explore this further.~~

Commented [srp2]: I suggest to delete this because what about sending flows for treatment once the allocation for the sanitary sewer is reached? Also, in looking at the graph, it there just doesn't seem to be a correlation between turbidity and copper at the low concentration levels.

7) As stated on page 67, PSNS believes that the dry dock non-cooling water cannot meet the temperature and copper limits as proposed in the working draft permit. Page 69, Section 12.2.3 Combined Cooling Water and Groundwater, states that ship non-contact cooling water which is routed to the dry dock side tunnels/culverts (which are parts of the dry dock

drainage system), commingles with the dry dock hydrostatic relief groundwater water prior to discharge to the drydock outfalls. Page 77 states that the copper in cooling water is mostly in the dissolved form.

Can the non-contact cooling water be collected prior to commingling with the groundwater? An effort should be made to separate and collect this water as management or treatment options for a reduced flow rate would likely be more flexible and feasible. As stated in Section 2.2.2 (page 69), cooling is needed only for nuclear powered naval vessels (as opposed to all vessels being serviced at the shipyard. It is understood that vessels including non-nuclear vessels, and undergoing ship breading activities, do not need cooling). Thus, perhaps two to three chillers may be sufficient as opposed to one installation for each drydock as stated on page 75. For the cooling towers option, to prevent scale deposition, periodic back flushing of the cooling towers may be necessary. For the cooling water reduction initiatives option, Ecology supports the proposal of reducing the designed flow rate to be closer to the flow rate actually required, and replacing the single pass cooling systems with small heat exchangers or chillers.

Commented [srp3]: Jeanne – why would you want them to collect for copper or temperature issues. I think that the volumes associated with the non-cooling water are huge and question whether treatment of copper would be practical.

For the oily water treatment system option to remove dissolved copper, the cost would be significantly reduced by treating just the dry dock drainage, ~~non-cooling water stream,~~ as opposed to treating the combined volume of non-cooling water and groundwater. For the electro-coagulation treatment option, page 78 states that there is not enough data to consider electro-coagulation treatment as an AKART treatment technology for the removal of dissolved copper. According to the available technical literature, this treatment technology can remove dissolved metals. Attached are some data generated from several facilities in removing dissolved copper using electro-coagulation. PSNS may review the data and consider re-evaluating this treatment option as many facilities have conducted pilot studies and concluded it to be a feasible AKART treatment option.

Commented [srp4]: What about electro-coagulation for the dry dock drainage/dry dock stormwater? I question whether it makes sense to remove copper from the cooling water - too dilute and these are huge volumes – unless the cooling water contacts the dry dock floor.

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8) Estimated compliance position for copper with the proposed limit in stormwater: Page 19, Table 5-4 states that the mean concentration of copper in stormwater is 63 µg/L and will therefore regularly exceed the proposed limit in the working draft permit. AKART for copper removal in stormwater should be included in the study in order to qualify for a mixing zone.

9) One of EPA's concerns with ship cooling water is having the cooling water wash contaminants from the dry dock floor into Sinclair Inlet. For this reason, the working draft permit prohibits the direct discharge of ship cooling water that contacts the dry dock floor. The intent of this provision is to prevent contact of the cooling water with spent

abrasives, paint chips, and other debris. Page 72 states that for a typical vessel, it takes one week to route the cooling water to the dry dock drainage. For aircraft carriers, two weeks are needed due to the additional time it takes to route the numerous sources of cooling water.

EPA understands that time is needed to route the cooling water, however the cooling must be routed directly to the dry dock drainage system, prior to the start of industrial operations in the dry docks.

10) Washwater *(e.g…..check with Susan)*– The AKART study doesn't appear to adequately address washwater. The working draft permit prohibits the direct discharge of washwater to Sinclair Inlet, because of the potential for washwater to come into contact with pollutants and wash the pollutants to Sinclair Inlet. In PSNS's comments to EPA on the working draft permit, PSNS described the need to discharge washwater to the bay following the flooding of the dry dock. However, with the exception of washing bay silt back to Sinclair Inlet following the flooding of a dry dock, all washwater in the dry dock must be directed to the sanitary sewer, or be treated prior to discharge to Sinclair Inlet. Washwater in industrial areas outside of the dry docks must be directed to the sanitary sewer or treatment.

11) Outdoor Metal Work: Attachment 7-Proposed New and Revised BMPs, BMP 11 on page 167 specific to dry docks, and BMP 12 on page 169 for areas outside of dry docks, item (2) of both BMPs states: "Metal work areas intended for use greater than one month must be completely enclosed." Outdoor metal work includes activities such as grinding, cutting, and sanding. The materials generate from these activities must be contained based on the size and the nature of the job in order to prevent from getting on the dry dock floors. Control and prevention should be implemented at the source. Ecology highly recommends that this BMP be revised to contain a description of the containment measures to be undertaking for specific activities.

12) Page 86, Section 13.2.3-Recycle Materials Transfer Site (RMTS), please includes the proposed construction schedule for the area so that stormwater can be appropriately directed to the treatment unit.

13) Page 95 and 96, Section 14.4.4.3 Option 3-Primary Source control and enhanced Surface Cleaning: PSNS proposes to implement this option by enclosing all copper anti-fouling spray painting operations along with enhancing street sweeping to minimize pollutants from coming in contact with stormwater. Ecology highly supports this proposal. Please include the proposed construction schedule for this option. *(need to review this again because it may not be possible for them to propose a schedule)*

14) Page 115, Table 16-2 Proposed Working Draft Permit Limits: The oil & grease limits listed on that table are reversed.

15) Page 158, please identify the "high risk" work areas. How do they compare to the stormwater zones identified in Section 14?

Thank you for the opportunity to review the Study. Please contact me or Susan Poulsom if you have any questions pertaining to the comments above. I can be reached at jtra461@ecy.wa.gov , or by telephone at (425) 649-7078. Susan can be reached at poulsom.susan@ ~~epamail.~~epa.gov , or by telephone at (206) 553-6258.

Sincerely,

Jeanne Tran, P.E.
Water Quality Engineer

Attachments: Data on Metal Removal from WaterTectonics

Cc: Susan Poulsom, EPA Region X
Michael Lidgard, EPA Region X
Matt Jabloner, PSNS & IMF
Steve Rupp, PSNS & IMF
Gerald Sherrell, PSNS & IMF